

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended): An electronic circuit comprising:

a controller for processing a processor task and comprising:

a plurality of peripheral devices for performing associated tasks; and

a central processing unit for controlling the plurality of peripheral devices;

an energy determination means for determining energy available to the controller; and

a control means for controlling the controller depending on the energy available to the controller,

wherein the control means is disposed to control the plurality of peripheral devices in dependency on the processor task, the associated tasks and the energy available to the controller,

wherein the control means is arranged so as to control the peripheral devices such that computing time required for performance of the processor task by the controller is minimized, and

wherein the controller is a cryptography processor, and the plurality of peripheral devices are cryptoprocessors for performing computing tasks, and wherein the processor task is selected from a group consisting of an encryption, a decryption, an authentication and a signature according to the DES standard, the AES method, the RSA algorithm and the elliptic-curve method, and wherein the computing tasks of the plurality of cryptoprocessors are selected from a group consisting of a modular and non-modular addition, multiplication, exponentiation and inversion, a hash-value calculation and a random number determination.

Claim 2 (Original): The electronic circuit as claimed in claim 1, wherein the control means is arranged so as to control the controller such that an energy required by the controller for the processor task is essentially equal to the energy available to the controller.

Claim 3 (Original): The electronic circuit as claimed in claim 1, further comprising:

an energy provision means for producing the energy available to the controller from electromagnetic energy supplied externally.

Claim 4 (Original): The electronic circuit as claimed in claim 1, which is designed as an integrated circuit suitable for an application with contact-less terminals.

Claim 5 (Previously presented): The electronic circuit as claimed in claim 1, wherein the control means comprises:

a means for setting a controller clock with which the controller is operated, wherein a clock rate of the controller clock is increased when there is more energy available and decreased when there is less energy available.

Claim 6 (Original): The electronic circuit as claimed in claim 1, wherein the controller is implemented in CMOS technology.

Claims 7-9 (Canceled)

Claim 10 (Currently amended): The electronic circuit as claimed in claim 8¹, wherein the control means further comprises:

a means for setting peripheral device clocks with which the plurality of peripheral devices are operated; and

a means for switching off individual peripheral devices of the plurality of peripheral devices.

Claim 11 (Previously presented): The electronic circuit as claimed in claim 10, wherein the means for setting the peripheral device clocks comprises an oscillator associated with one of the plurality of peripheral devices and produces a clock signal with an output clock frequency with which the associated peripheral device is clocked.

Claim 12 (Previously presented): The electronic device as claimed in claim 10, wherein the means for setting the peripheral device clocks comprises a clock multiplier associated with one of the plurality of peripheral devices and produces a clock signal with an output clock frequency with which the associated peripheral device is clocked.

Claim 13 (Previously presented): The electronic circuit as claimed in claim 1, wherein the control means comprises a first means for setting a first clock with which the central processing unit is operated, and a second means for setting a second clock with which the peripheral devices are operated, the first and second clocks being set such that the energy available suffices for processing

the processor tasks and that, at the same time, the peripheral devices are assigned a maximum energy possible for performing the associated tasks.

Claim 14 (Currently Amended): A method for controlling an electronic circuit comprising a controller for processing a processor task, wherein the controller comprises a plurality of peripheral devices for performing associated tasks and a central processing unit for controlling the plurality of peripheral devices, the method comprising the steps of:

determining energy available to the controller; and

controlling the controller depending on the energy available to the controller, wherein the controlling is performed to control the plurality of peripheral devices in dependency on the processor task, the associated tasks and the energy available to the controller;

wherein the controlling is performed so as to control the peripheral devices such that computing time required for performance of the processor task by the controller is minimized, and

wherein the controller is a cryptography processor, and the plurality of peripheral devices are cryptocoprocessors for performing computing tasks, and wherein the processor task is selected from a group consisting of an encryption, a decryption, an authentication and a signature according to the DES standard, the AES method, the RSA algorithm and the elliptic-curve method, and wherein the computing tasks of the plurality of cryptocoprocessors are selected from a group consisting of a modular and non-modular addition, multiplication, exponentiation and inversion, a hash-value calculation and a random number determination.

Claim 15 (Currently amended): An electronic circuit comprising:

a first controller ~~that—configured to processes—process~~ a processor task and comprises comprising:

a plurality of peripheral devices ~~that perform—each having an associated tasks—task~~ associated therewith; and

a central processing unit ~~that—being configured to controls—control~~ the plurality of peripheral devices;

an energy producer configured to produces an energy available to the first controller from electromagnetic energy supplied externally from a contact-less terminal so that the energy available to the first controller depends on the distance between the chip card and the contact-less terminal;

an energy determiner ~~that—configured to determines—determine the~~ energy available to the controller; and

a second controller ~~that—configured to controls—control~~ the first controller depending on the energy available to the first controller, ~~wherein the second controller is disposed to by setting a controller clock with which the first controller is operated dependent on the energy available and control—controlling~~ the plurality of peripheral devices in dependency on the processor task, the associated tasks and the energy available to the first controller.

Claim 16 (Previously presented): The electronic circuit as claimed in claim 15, wherein the second controller is arranged so as to control the first controller such that an energy required by the first controller for the processor task is essentially equal to the energy available to the first controller.

Claim 17 (Canceled)

Claim 18 (Previously presented): The electronic circuit as claimed in claim 15, which is designed as an integrated circuit suitable for an application with contact-less terminals.

Claim 19 (Previously presented): The electronic circuit as claimed in claim 15, wherein the second controller comprises:

a controller clock setter with which the first controller is operated, wherein a clock rate of the first controller clock is increased when there is more energy available and decreased when there is less energy available.

Claim 20 (Previously presented): The electronic circuit as claimed in claim 15, wherein the first controller is implemented in CMOS technology.

Claim 21 (Currently amended): An electronic circuit comprising:

a first controller configured to process a processor task and comprising:

a plurality of peripheral devices each having an associated task associated therewith;

and

a central processing unit being configured to control the plurality of peripheral

devices;

an energy determiner configured to determine an energy available to the controller; and

a second controller configured to control the first controller depending on the energy available to the first controller by setting a controller clock with which the first controller is

operated dependent on the energy available and controlling the plurality of peripheral devices in dependency on the processor task, the associated tasks and the energy available to the first controller,

The electronic circuit as claimed in claim 15, wherein the second controller is arranged so as to control the peripheral devices such that computing time required for performance of the processor task by the first controller is minimized, and

wherein the first controller is a cryptography processor, and the plurality of peripheral devices are cryptocoprocessors that perform computing tasks, and wherein the processor task is selected from a group consisting of an encryption, a decryption, an authentication and a signature according to the DES standard, the AES method, the RSA algorithm and the elliptic-curve method, and wherein the computing tasks of the plurality of cryptocoprocessors are selected from a group consisting of a modular and non-modular addition, multiplication, exponentiation and inversion, a hash-value calculation and a random number determination.

Claim 22 (Canceled)

Claim 23 (Previously presented): The electronic circuit as claimed in claim 21, wherein the second controller further comprises:

a peripheral device clock setter with which the plurality of peripheral devices are operated;
and
a switch that switches off individual peripheral devices of the plurality of peripheral devices.

Claim 24 (Previously presented): The electronic circuit as claimed in claim 23, wherein the peripheral device clock setter comprises an oscillator associated with one of the plurality of peripheral devices and produces a clock signal with an output clock frequency with which the associated peripheral device is clocked.

Claim 25 (Previously presented): The electronic device as claimed in claim 23, wherein the peripheral device clock setter comprises a clock multiplier associated with one of the plurality of peripheral devices and produces a clock signal with an output clock frequency with which the associated peripheral device is clocked.

Claim 26 (Currently amended): The electronic circuit as claimed in claim 15, wherein the second controller comprises a first clock setter that sets a first clock with which the central processing unit is operated, and a second clock setter that sets a second clock with which the peripheral devices are operated, the first and second clock setters being configured to individually set the first and second clock such that the energy available suffices for processing the processor tasks and that, at the same time, the peripheral first devices controller are assigned a maximum energy possible needs a minimum time for performing the associated processor task task.

Claim 27 (Previously presented) The electronic circuit as claimed in claim 1, wherein the electronic circuit is integrated in a single chip.

Claim 28 (Previously presented) The electronic circuit as claimed in claim 1, wherein the electronic circuit is composed of individual components arranged an a single circuit board.